

Site-specific Tillage Strategies and Practices for the Widely Spaced Row Crops in California

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Goals: Site-specific tillage strategies and practices are being developed and tested by U.C. Davis scientists for the widely spaced crops, such as cotton, corn, etc. Perhaps the main, if not the sole, reason for the preparation of a seed-bed is to provide a favorable environment for the seed to germinate which requires a good contact between the seed and the soil for moisture inhibition. The main idea behind the site-specific tillage strategy being: *why prepare the entire field surface area into a seed bed when only a small fraction of the area is going to be planted with seeds?*

Technology Path: In order to test the ideas, a special 4-row planter has been fabricated at U.C. Davis, which can be extended to any number of rows (photo at right). The planter combines the site-specific seed bed preparation and the seed sowing into a single operation. In order to accomplish this U.C. Davis scientists fitted small independent rotary-tiller units directly in front of each sowing (planting) unit (see photo below). Currently the rotary tillers are powered with



hydraulic motors but alternate power mechanisms will be explored later. The result being that about a 4-inch wide strip of soil is thoroughly tilled into a fine seed-bed by the rotary-tillers (cutting and shredding even the previous year's stubble and crop debris) and then immediately followed by seed sowing by the planting units mounted directly behind the tillers. The depth of

tillage and seed sowing can be independently controlled to suit the soil and environmental conditions.

These ideas are in their third year of testing. This year a trial on cotton in the San Joaquin Valley and another one on corn at the U.C. Experiment Station at Davis are being conducted and compared with conventional tillage practices. All observations recorded so far show that there is no difference in crop growth and development of cotton or corn planted using site-specific tillage practices as compared to conventional tillage practices.



Principal Investigator:

Dr. Sham Goyal, researcher with the University of California, Davis is the project manager. For further information, please contact Dr. Goyal at 530-752-2472.